



California Morbidity

Prevention of Occupational Asthma in California: The SENSOR Project

Asthma is the most commonly diagnosed occupational respiratory disease in developed countries (1-3). It is estimated that workplace exposures are responsible for up to 20% of all asthma cases among adults (4-6). In some industries, such as those involving exposure to isocyanates or red cedar, approximately 5% of workers have been documented to develop occupational asthma (7,8). In 1985, asthma was estimated to be responsible for approximately one million lost workdays in the U.S. (9).

Occupational asthma is underdiagnosed and underreported. A Michigan study estimated that only 0.2 - 2.7% of the occupational asthma cases in that state were identified through standard reporting mechanisms (10). An additional study in the U.K. estimates that the true incidence of occupational asthma is 3 times the reported incidence (11). The primary treatment for occupational asthma is removal from the source of exposure. The prognosis for recovery, after exposure ceases, is significantly affected by the amount of time elapsed from onset to diagnosis. The majority of people who develop occupational asthma fail to fully recover, even after several years without exposure. A number of studies have shown that 50-60% of workers were still symptomatic 3 to 4 years after exposure had ended (12-14).

Risk factors for occupational asthma remain poorly understood and controlled. California is one of several states to receive funding from the National Institute for Occupational Safety and Health (NIOSH) to conduct surveillance of occupational asthma. The California Department of Health Services' Sentinel Event Notification System for Occupational Risks (SENSOR) program was developed to identify primary and secondary cases of occupational asthma, characterize exposures and disease, develop interventions in the workplace, and devise prevention strategies.

California law requires that physicians file a Doctor's First Report of Occupational Injury or Illness for each case of suspected illness or injury caused on the job. The SENSOR program depends upon Doctor's First Reports for case identification. These reports constitute a sentinel event, providing an opportunity for follow-up, investigation and prevention. The SENSOR project has documented that occupational asthma is a significant problem in California. Since 1993, an average of 315 cases of work-related asthma has been reported to the SENSOR program each year, with cases reported from every region of the state. Workers reported to have occupational asthma were 46% male and 54% female compared to the California workforce of 56% male and 44% female. Nearly 60% of the cases were in the age range of 30 - 50 years. The overall rate of occupational asthma by industry is 2.5 cases per 100,000 workers, with high rates in local transit agencies (13.6 /100,000), electric and gas industries (8.2 /100,000), lumber and wood manufacturing (6.1 /100,000), and social services (5.1 /100,000).

Approximately half the occupational asthma cases reported through Doctor's First Reports could be reached by telephone and agreed to a follow-up interview. Among those cases that were reached, the interview completion rate was 80%. The interview collects additional information on work practices, chemical exposures, and medical history (Table 1). The most common categories of exposure agents identified were mineral and inorganic dusts, solvents, end-products of heating processes (pyrolysis), acids, bases and oxidizers, plant materials, and cleaning materials (Table 2). Of the documented asthma sensitizing agents, the most commonly reported were isocyanates and formaldehyde. Additional information on industry and occupation was also obtained (Table 3 and Table 4).

Physicians play a crucial role in preventing occupational asthma. Identifying cases promptly is critical to stopping exposure and significantly improving the chance for recovery. It is important for all clinicians to be aware of the prevalence and consequences of occupational asthma and to file a Doctor's First Report whenever the condition is identified or suspected. For more information on the SENSOR program, contact Dr. Robert Harrison at 510-540-2189.

Reported by: Occupational Health Surveillance and Evaluation Program, Occupational Health Branch, Division of Environmental and Occupational Disease Control.

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Table 1. Interviewed Asthma Cases by Diagnosis. 3/1/93 - 2/29/96 (N=444)

| <u>Diagnosis</u> | <u>No. of Cases</u> |
|------------------------|---------------------|
| New Onset Asthma | 290 (65%) |
| Work-Aggravated Asthma | 154 (35%) |
| <i>Total</i> | 444 (100%) |

Table 2. Interviewed Asthma Cases by Agents Identified. 3/1/93 - 2/29/96 (N=444)

| <u>Agent</u> | <u>No. of Cases</u> |
|--------------------------|---------------------|
| Mineral, Inorganic Dusts | 77 |
| Solvents | 53 |
| Pyrolysis Products | 34 |
| Acids, Bases, Oxidizers | 30 |
| Cleaning Materials | 30 |
| Plant Materials | 30 |

Table 3. Asthma Rates by Top 5 Industries. Doctor's First Reports. 3/1/93 - 2/29/96 N = 945

| <u>Industry</u> | <u>Rate/100,000</u> |
|--------------------------|---------------------|
| Transportation Equipment | 5.0 |
| Manufacturing | |
| Social Services | 5.1 |
| Lumber and Wood | 6.1 |
| Manufacturing | |
| Electric, Gas, Sanitary | 8.2 |
| Local Transit | 13.6 |

Table 4. Asthma Rates by Occupation. Doctor's First Reports. 3/1/93 - 2/29/96 N = 945

| <u>Occupation</u> | <u>Rate/100,000</u> |
|-----------------------------|---------------------|
| Managerial/Professional | 1.2 |
| Precision Production, Craft | 1.5 |
| Technical, Sales, Admin. | 1.8 |
| All Occupations | 2.3 |
| Operators, Fabricators, | 2.7 |
| Laborers | |
| Service | 3.3 |
| Farming, Forestry, Fishing | 3.7 |